HOHENHEIMER
DISKUSSIONSBEITRÄGE

Perspectives of Workers with Low Qualifications in Germany under the Pressures of Globalization and Technical Progress

by

Harald Hagemann and Ralf Rukwid

Nr. 291/2007

Institut für Volkswirtschaftslehre (520)
Universität Hohenheim, 70593 Stuttgart

ISSN 0930-8334

Perspectives of Workers with Low Qualifications in Germany under the Pressures of Globalization and Technical Progress

by

Harald Hagemann and *Ralf Rukwid*

University of Hohenheim

October 2007

Paper presented at the conference 'Unemployment: Past and Present' at Downing College, University of Cambridge, UK, 30 August - 1 September, 2007.

Abstract:

This paper gives a detailed analysis of the perspectives of workers with low qualifications in Germany under the twofold pressures of globalization and technological change. First, alternative explanations for the skill-bias in the development of labour demand are discussed, with particular emphasis on the "trade versus technology" debate. The consequences of the demand shift away from low-skilled labour in Germany are examined in a detailed empirical analysis of the development of (un)employment problems differentiated for qualification groups. Compared to other advanced economies, Germany shows a higher unemployment rate among less-qualified workers which is generally associated with a lack of flexibility in the German wage structure. However, an analysis of German, U.S. and British wage data based on the Cross National Equivalent File (*CNEF*) does not confirm the assumption of a simple monocausal relationship between wage disparity and the intensity of group-specific unemployment. Finally, some political approaches for an improvement of the job prospects of less-qualified persons in Germany are outlined briefly and evaluated against the background of the empirical results.

JEL classification: J2, J3, F1

Keywords: low-skilled labour, unemployment, wage inequality, globalization, skill-biased technological change

Corresponding authors: Harald Hagemann and Ralf Rukwid, University of Hohenheim, Department of Economics (520H), D-70593 Stuttgart, Email: *hagemann@uni-hohenheim.de* / *rukwid@uni-hohenheim.de*

1. Introduction

The perspectives of low-skilled workers in the industrialized countries have deteriorated in recent decades. In the United States, for example, a marked rise in wage inequality and low and partly decreasing real wages for less-qualified employees (*working poor*) have been observed. Germany, on the other hand, shows a higher unemployment rate among unskilled workers which is generally associated with a lack of flexibility in the German wage structure. The different labour market problems of low-skilled workers in the Western European countries such as Germany and in the United States are widely recognized as two sides of the same coin, reflecting a structural change in the demand for labour in the more advanced economies in favour of the high skilled and to the disadvantage of the low skilled (with different consequences according to the country-specific extent of wage flexibility).

The aim of this paper is to give a detailed analysis of the perspectives of workers with low qualifications in Germany under the twofold pressures of globalization and technological change. We first focus on the different hypotheses in explaining the obvious relative fall in demand for less-skilled labour in Germany. A lively debate has risen about the question whether the deepening of interindustry trade with developing and newly industrialized economies (NIE) or the so-called skill-based technical change drives the skill composition of the labour force in the advanced economies. The paper summarizes the underlying theoretical considerations of this debate and discusses the validity of the opposite hypotheses. Besides interindustry trade, alternative channels through which globalization affects relative labour demand are identified and evaluated. Furthermore, the relevance of wage rigidities to the rise of unemployment of low-skilled workers in Germany is assessed on the basis of empirical evidence, and implications for better job prospects of these workers are discussed.

Section 2 focuses on the main causes for the skill-bias in the development of labour demand since the early 1980s, with particular emphasis on the "trade versus technology" debate. In *section 3* we give a detailed empirical analysis of the development of (un)employment problems in Germany differentiated for qualification groups. Seventeen years after unification there still exist important differences between West and East Germany. In section 3 we also discuss the labour market risks for different skill groups in international comparison, whereas *section 4* focuses on the relative flexibility of the German wage structure. In particular we compare the development of wage inequality in Germany with the development in the United States and Great Britain since the 1980s on the basis of the Cross National Equivalent File (*CNEF*). In *section 5* we conclude with some economic policy consequences of our results.

2. Causes of the skill-specific structural change in labour demand

Structural change in labour demand has often been interpreted against the background of globalization in the last decade. Particularly the increasing problems of the less-qualified workers, with greater emphasis on lower wages and poverty problems in the United States and Great Britain and on unemployment problems in countries such as Germany and France, have been widely attributed to the intensification of the international division of labour going along with increasing interindustry trade of OECD countries with threshold and developing economies. The opening up of China, the rise of India and South-East Asian economies, Brazil, Mexico, etc., and the integration of formerly socialist economies after the collapse of the Soviet Union into the capitalist world economy, have strongly changed the relative scarcities of the factors of production, to the advantage of capital and to the disadvantage of low-skilled workers in the more advanced economies. According to neoclassical trade theory, the relative changes in the remuneration rates of the factors of production were explained on the basis of the Heckscher-Ohlin model, the factor-price equalization, and the Stolper-Samuelson theorem. For the 'demonstration' of (un)employment effects the Heckscher-Ohlin-Samuelson (HOS) model only had to be enlarged by an element assuming a certain degree of flexibility/rigidity of relative wages, as it had been done by Krugman (1995) or Davis (1998). Thus a globalization shock either leads to greater price effects or quantity effects in form of higher unemployment rates of the less skilled, i.e. it depends on the degree of regulation of the labour market, whether a structural change in labour demand primarily leads to a greater wage dispersion or higher unemployment of the less skilled. According to this view, institutional regulations which create a barrier against a greater downward flexibility of wages, either in the form of minimum wages or 'generous' social benefits, thus contribute to higher unemployment of the low-skilled workers. Krugman took "it as a maintained hypothesis that the European unemployment problem and the U.S. inequality problem are two sides of the same coin" (1994, p. 37). The 'two-sides–of–the-same-coin'– or *Krugman hypothesis* thus supposes an empirical trade-off between joblessness and wage inequality of low-skilled workers in advanced economies.

Wood (1994) had already shown that beyond the HOS model additional mechanisms exist which raise the qualification bonus above the one directly caused by trade with developing countries. First, import competition has pushed away many activities from the market in the advanced economies which contain a low amount of high-skilled labour. Therefore factor-content studies of trade, which only calculate the existing factor proportions in the remaining activities, underestimate the decline of demand for low-skilled labour as a consequence of

international trade. Second, import competition from the South had stimulated the generation and application of labour-saving technological change in the North, i.e. at least some of the innovations which economists have made responsible for the rise of the qualification bonus were triggered off by international trade itself.

However, many economists are sceptical against the hypothesis of an increasing interindustry division of labour as the main cause of the erosion of wages and/or jobs of low-skilled workers in advanced economies which are human capital abundant. Thus the exports of goods and services of the newly industrialized economies stay well behind the volume of primarily interindustry trade between OECD countries. In Germany as well as in other advanced economies the employment share of the low-skilled workers has also declined in sectors which are not directly exposed to import competition against the logic of the HOS model. Therefore alternative approaches have been formulated to explain the development on the labour market. Further strong candidates as main causes for the deteriorated income and/or employment situation of the low-skilled workers in the advanced economies are changes in labour supply and in institutional factors, structural change, and particularly a skill-biased technological change.[1]

The controversy on the overall employment consequences of new technologies between a labour displacement pessimism and a compensation optimism is one of the oldest in economics ever since Ricardo has discussed the machinery problem. The phenomenon has much in common with the effects of free trade and a growing international division of labour: no doubt beneficial for almost everybody in the long run, and in the aggregate normally also in the short run, but it cannot be denied that in the short and medium run very often there are not only winners but also losers. The political processes do not always work in a way that the losers are compensated by the winners (see, e.g., Samuelson 2004), which would reduce the resistance against increasing globalization among the low-skilled workers in the advanced economies.

A skill-biased technological change with high probability plays a major role in the economic decline of the less-squalified workers in the advanced economies. The implementation of new technologies often leads to an increase of demand for high-skilled and at the same time a decline for low-skilled workers as a consequence of dynamic substitution processes. Technical progress thereby is of an asymmetric nature and a major cause for the structural change in labour demand. In other words: “trade matters, but it is neither all that matters nor the primary cause of observed changes” (Freeman 1995, p. 30).

[1] See Grossmann (1999). For emphasis on structural change towards services as a decisive factor of a more uneven distribution of income see Nollmann (2006).

Since the mid-1990s economists argue on the relative weight of interindustry trade and a skill-biased technological change for the labour markets in the advanced economies within the so-called *"trade versus technology"* debate. In this context, a variety of empirical evidence and methods have been used: factor content studies, implication tests, regression analyses based on the HOS model, or the calibration of general equilibrium models. A majority of the studies come to the result that technological change has been more important in its impact on the structural change in labour demand.[2] However, the overall result of the quantitative importance of the different causes empirically is still not yet clear. This holds in particular for the development on the German labour market, due to a small number of studies existing, problems with the empirical data and insecurity about the appropriate methods to be applied. Furthermore, there exists the conceptual problem that the two main causes are mutually dependent. On the one hand, new major technologies, particularly in the transport sector, in information and communication, have been a main driving force for globalization, as it had been the case in the decades before World War I. On the other hand, globalization then and now has significantly influenced the relative scarcities of factors of production, their remuneration rates, the degree of inequality (see Williamson 1995) and thereby generated a factor price-induced technological change. This mutual causality between trade and technology creates a separation problem which, at least empirically, is difficult to overcome.

Furthermore, there exists an additional problem. "The argument against trade is based, in part, on a misreading of the data. … This line of reasoning emphasizes trade in final goods and ignores the globalization of production and recent dramatic increases in trade in *intermediate inputs*" (Feenstra and Hanson 2001, p. 46; our italics). Thus there is a tendency of an increasing decomposition of the production process and to offshore certain value-added stages into countries which show cost advantages. According to the comparative advantages defined above companies in advanced economies primarily shift low-labour intensive parts of their value-added chain into low-wage countries. As Feenstra and Hanson have shown within the framework of outsourcing models, the trade with intermediate products thereby generated has contributed to a reduction of the relative remuneration of low-qualified labour. Thus it had been shown beyond the original Stolper-Samuelson model that further transmission channels of globalization help to explain the deteriorated relative position of low-skilled workers on the labour market in the advanced economies. Migration processes and technology transfer, for example via foreign direct investment, are further causal factors which affect the labour market. Summing up, it can be stated that globalization *together with* technological change has

[2] See Heitger and Stehn (2003), OECD (2005a), and most recently IMF (2007, chapter 4).

decisively contributed to the skill-biased structural change on the labour market in the advanced economies leading to the "pauperization" of the less qualified workers and exerting an enormous pressure on them.

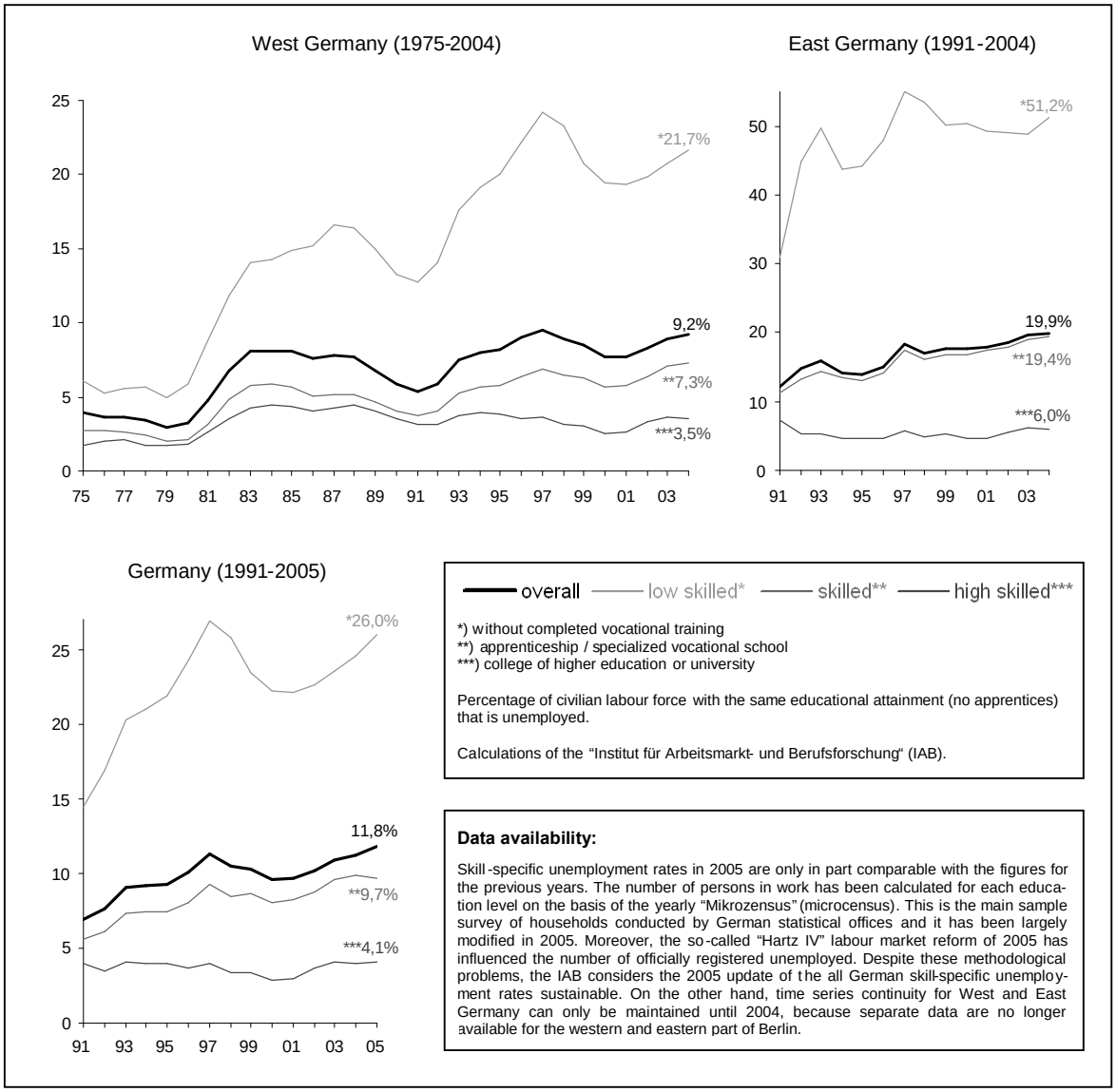
3. Employment problems of low-skilled workers

Having discussed the potential reasons for the demand shift away from low-skilled labour we now focus on the consequences of this development for the German labour market. Usually a rather inflexible wage structure is assumed for Germany. So, according to the above-mentioned *"two sides of the same coin"* hypothesis, mainly employment effects can be expected. Indeed, a high level of unemployment has been regarded as one of the most urgent social problems in Germany for years. The German unemployment rate was rising with every economic slump since the mid-1970s - without declining to the previous level in the upswing following the respective recession period. Low-skilled workers were affected more than others by this disproportionate development and are now seen as a particular risk group on the German labour market. The following section will examine the strength of the influence of educational qualification on job prospects and on the individual risk of becoming unemployed.

3.1 The structure of employment and unemployment in Germany

The influence of formal education on employment opportunities and risks is reflected, inter alia, in the specific unemployment rates of different skill groups. *Figure 1* shows the development of the skill-specific unemployment rates and illustrates that the job prospects of the low skilled have deteriorated above proportion with rising total unemployment in Germany. While the unemployment rate of the mean skilled follows more or less the overall rate (about two thirds of those in work belong to this skill group), employment opportunities of the unskilled and persons with an academic background diverge more and more, especially since the early 1990s. University graduates and graduates of specialized colleges of higher education (*Fachhochschule*) have obviously borne the lowest labour market risk over the whole observation period. Their unemployment rate remained stable at a low level. On the other hand, unemployment among the low skilled rose almost constantly.

Fig. 1: Skill-specific unemployment rates in Germany



Source: Reinberg and Hummel (2007), appendix 1a, authors' illustration.

According to calculations of the *Institut für Arbeitsmarkt- und Berufsforschung* (IAB),[3] 21.7% of unskilled persons were unemployed in West Germany and even 51.2% in East Germany in 2004. However, individuals without any vocational qualifications represented rather the exceptional case in the former German Democratic Republic. *Table 1* shows, in this context, that the low skilled had a lower share of total unemployment in East Germany than in West Germany in 2004 (meaning that relatively less unemployed persons were unskilled in the eastern part of Germany despite their very high specific unemployment rate). In overall Germany 40.3% of all unemployed had no vocational qualifications in 2005 but the labour force share of this skill group amounted to only 31% (Reinberg and Hummel 2007, table 1).

[3] Institute for the Research of Labour Market and Occupations.

Table 1: Structure of unemployment in Germany

	West Germany 2004			East Germany 2004		
	low skilled	skilled	high skilled	low skilled	skilled	high skilled
specific unemployment rate[1)]	21.7	7.3	3.3	51.2	19.4	6.0
share of total unemployment[2)]	41.1	52.3	6.5	20.6	74.6	4.8
	overall Germany 2004			**overall Germany 2005**		
	low skilled	skilled	high skilled	low skilled	skilled	high skilled
specific unemployment rate[1)]	24.6	9.9	4.0	26.0	9.7	4.1
share of total unemployment[2)]	34.3	59.8	5.9	40.3	54.2	5.5

1) Percentage of civilian labour force with the same educational attainment (no apprentices) that is unemployed.
2) Percentage of all unemployed persons by educational attainment.

low skilled: without completed vocational training, *skilled:* apprenticeship / specialized vocational school, *high skilled:* college of higher education or university

Calculations of the "Institut für Arbeitsmarkt- und Berufsforschung" (IAB).

Source: Reinberg and Hummel 2007, appendix 2a, authors' illustration.

These figures indicate that effective policies to reduce the total level of unemployment cannot ignore the specific labour market problems of the low skilled which will probably get even worse in the future. Current forecasts of labour demand and its structure, such as the *"Deutschland Report 2030"* of Prognos, predict a further reduction of simple jobs. Moreover, cognitive requirements even of the so-called simple or low-skilled jobs presumably will increase in the manufacturing and in the service sector so that a growing number of these jobs could be occupied by higher-skilled workers (Kupka 2005, p. 13). Future shifts of the population's age structure to older cohorts don't necessarily improve the job prospects of the low skilled. On the contrary, after the relatively well-trained cohorts of the 1950s and 1960s will have attained pension age, there will probably be a lack of qualified employees with negative economic effects in particular for the low skilled (Brenke 2007, p. 79).

It should be kept in mind that the labour market position of less-qualified workers has deteriorated despite a shift of labour supply toward higher educational qualification. West Germany as well as East Germany initiated an educational expansion after 1945. An improved system of education in association with strong cohorts has notably increased the skill level of the population over the last decades. In West Germany the labour force share of the unskilled has declined sharply since the mid-1970s, whereas the shares of the mean and the highest skill group have increased. However, the shares of the low skilled and the averagely skilled have stagnated to a certain degree since the early 1990s (Reinberg 2004, pp. 61ff.). For the younger cohorts of the labour force even a declining level of educational qualification can be observed in recent years. According to the German Federal Statistical Office, the share of the 20- to 24-year old population with at least a secondary education degree (high school or vocational education) declined from 74.7% to 71.0% between 2000 and 2005 (Statistisches Bundesamt

2006b, pp. 34f.). Children of immigrant families have a share much above average among those without completed vocational training.[4]

Another problematic issue is the supposition that even in the case of a distinct and continuous boom there will be no important improvement of the employment opportunities for low-skilled workers. Reinberg and Hummel (2005) point to the fact that in the past the reduction of low-skilled jobs didn't stop or go into reverse even in times of strong economic growth in Germany – at best a slowdown of job reduction was observed. The business cycle obviously had no stronger influence on the job losses of the unskilled or the massive job gains of the university graduates. Therefore, it is rather questionable whether a continuous economic growth above the German employment threshold could also create new jobs for the low skilled.

Hence, the unfavourable labour market trend for the less qualified is not only reflected in changing skill-specific unemployment rates but also in a shift of the employment structure. In West Germany the share of the jobs which are subject to social insurance contribution and which are occupied by persons without vocational qualifications actually declined from 30% to about 17% between 1980 and 2002 (Kalina/Weinkopf 2005, pp. 2f.). The overall decline of unskilled employment, however, in part involves contradictory processes. Kalina and Weinkopf (2005), for example, point to a rising employment of the low skilled in certain industries respectively occupations between 1999 and 2002.[5] Nonetheless, such positive employment tendencies, especially in the service sector, obviously couldn't stop the overall deterioration of the labour market conditions for the unskilled. In this context, not only the continuous reduction of simple jobs due to rationalization seems to be relevant. Furthermore, there is indication of increasing displacement of low-skilled employees by higher-skilled workers. More and more persons with a better educational attainment occupy the originally low-skilled jobs during recessions and thus diminish employment opportunities for unskilled workers.

[4] On the basis of the *Mikrozensus* (microcensus), Klemm (2001) finds out that in 1998 the share of young adults without a completed vocational training was three times higher among foreigners than among German citizens of the same age (more than one-third of the 20- to 25-year old foreigners had no vocational qualifications in West Germany as well as in East Germany). Kupka (2005) argues that these figures imperfectly reflect the problems of the children of immigrant families, since only German and foreign adolescents can be distinguished. According to the Mikrozensus 2005, however, there are more than 8 million German citizens with a migration background in addition to the 7.3 million foreigners in Germany (Statistisches Bundesamt 2006a, pp. 73ff.).

[5] Among others the hotel and catering industry, trade and commerce, health care and the cleaning industry can be identified as "growth sectors" in this context.

3.2 Skill-specific labour market risks in international comparison

Structural change that particularly puts pressure on the low skilled is not limited to Germany. Nevertheless, the employment problems of the less qualified in Germany seem to be different from the ones of most other advanced economies. OECD data can be used for an international comparison of relative labour market risks of various skill groups. The annual publication *"Education at a Glance"* contains skill-specific employment rates and unemployment rates for all OECD member countries. The group-specific unemployment rate of the unskilled in Germany is higher than in other major countries – and the German employment rate of the lowest qualification group accordingly turns out to be below-average. However, the latest figures for 2004 don't confirm Germany's position of "world champion" in the unemployment rate of the low skilled as it is sometimes emphasized in the literature (Sinn 2005, pp. 23f. and 34). According to the OECD calculations, the already very high German unemployment rate of the lowest skill group of 20.5% (male and female labour force aged 25 to 64 years) is still surpassed by the Czech Republik (23.0%), Poland (27.8%) and Slovakia (47.7%).[6]

Of course, it has to be considered that the level of overall unemployment in Germany is higher than in many other developed economies. In 2006 the German unemployment rate was, according to EUROSTAT, above EU average which itself clearly exceeded the U.S. and Japanese reference values. Within the European Union unemployment rates vary widely and indicate more or less independent labour markets, despite officially "free" movement of labour (Nickell 2003, p. 25). To be able to compare the relative unemployment risks of the unqualified, it is necessary to adjust for the different levels of total unemployment. In this context, it is advisable to follow the approach of Nickell and Bell (1996) and to calculate ratios of the skill-specific unemployment rates. Therefore, *Table 2* shows, in addition to the specific unemployment rates of the different skill groups, the ratio between the rate of the unqualified and the rate of the university graduates.

The comparison of the job prospects of the low skilled in Germany, the Unites States and Great Britain appears to be particularly interesting. In the Anglo-Saxon countries, whose wage structures are assumed to be especially flexible, the unemployment rates of the unskilled for 2004 were, as expected, lower than in Germany. At the beginning of the 1990s, however, the situation on the labour markets was completely different. At that time, the unemployment rate of the lowest skill group amounted to just 7.4% in Germany. This was unmistakably be-

[6] The skill-specific unemployment rates published by the OECD differ from the ones presented in section 3.1. In order to allow international comparisons, the OECD applies the ILO unemployment concept. Moreover, the skill groups are partially defined in a different way.

low the OECD average, whereas Great Britain and the United States evidently had above-average rates. In the middle of the 1990s Nickell and Bell still dealt with the question why low-skilled workers had better employment opportunities in Germany than in the Anglo-Saxon countries, despite higher and less-flexible real wages for low wage earners. As a possible explanation the authors referred to the characteristics of the German education and training system. Nickell and Bell saw for the early 1990s a strong emphasis in the German schooling system on sustaining a high level of performance on the part of the bottom half of the ability range. Together with a comprehensive system of vocational training this would mitigate many of the adverse consequences of the shift in labour demand away from the unskilled (Nickell/Bell 1996, pp. 305ff.). Referring now to the relative unemployment risk of the low skilled, *table 2* shows for Great Britain and the United States a decline of the ratios between the group-specific unemployment rates of the unqualified and the high qualified, especially since the end of the 1990s. However, they still surpass the OECD average on the base of the latest data. The German ratio, on the other hand, started below the average and rather stable OECD level and rose more or less constantly over time. In 2003 it topped the British and the American ratios for the first time.

Table 2: Labour market risks of different skill groups in Germany, Great Britain and the United States

		1991	1995	1998	1999	2000	2001	2002	2003	2004
GER	low skilled (LS)	7.4	13.3	15.4	*15.9*	13.9	13.5	15.3	18.0	20.5
	skilled (S)	4.7	7.9	10.3	*8.8*	8.1	8.2	9.0	10.2	11.2
	high skilled (HS)	3.2	4.9	5.5	*5.0*	4.2	4.2	4.5	5.2	5.5
	ratio LS/HS	**2.3**	**2.7**	**2.8**	***3.2***	**3.3**	**3.2**	**3.4**	**3.5**	**3.7**
GB	low skilled (LS)	10.4	12.8	10.5	*10.0*	8.9	7.6	8.5	6.9	6.6
	skilled (S)	6.5	7.5	5.0	*4.9*	4.6	3.9	4.1	3.9	3.7
	high skilled (HS)	3.3	3.7	2.6	*2.7*	2.1	2.0	2.4	2.4	2.2
	ratio LS/HS	**3.1**	**3.4**	**4.1**	***3.7***	**4.2**	**3.8**	**3.5**	**2.9**	**2.9**
USA	low skilled (LS)	12.3	10.0	8.5	*7.7*	7.9	8.1	10.2	9.9	10.5
	skilled (S)	6.5	5.0	4.5	*3.7*	3.6	3.8	5.7	6.1	5.6
	high skilled (HS)	2.9	2.7	2.1	*2.1*	1.8	2.1	3.0	3.4	3.3
	ratio LS/HS	**4.2**	**3.6**	**4.1**	***3.7***	**4.5**	**3.9**	**3.4**	**2.9**	**3.2**
OECD*	low skilled (LS)	*8.9*	10.8	9.5	*9.5*	9.1	8.9	9.4	10.2	10.4
	skilled (S)	*5.9*	7.3	6.4	*6.1*	5.8	5.6	5.9	6.2	6.2
	high skilled (HS)	*3.5*	4.6	4.1	*3.8*	3.6	3.3	3.8	4.0	3.9
	ratio LS/HS	***2.5***	**2.3**	**2.3**	***2.5***	**2.6**	**2.7**	**2.5**	**2.6**	**2.7**

*) average for all OECD member countries

Number of 25-to-64-year-olds in unemployment as a percentage of the labour force aged 25 to 64, by level of educational attainment.

Distinction of skill groups according to ISCED classification:
LS - Below upper secondary
S - Upper secondary and post-secondary non-tertiary
HS - Tertiary education

Source: OECD (Education at a Glance 2006, pp. 118f. and 2005, pp. 113f.), authors' illustration.

In order to assess the labour market situation of the less-qualified persons in Germany, the *Deutsche Bundesbank* also aims to adjust for the different height of total unemployment in the advanced economies. For this purpose the Bundesbank compares in its Monthly Report of January 2007 the unemployment shares (resp. the employment shares) of low-skilled persons with their labour force shares (resp. population shares). In Germany the unemployment share of the lowest skill group is, as expected, higher than the corresponding labour force share and moreover, the employment share of the unskilled falls behind the population share. This diagnosis also applies, however, to the other member countries of the Euro Zone as well as Great Britain and the United States.[7] For Germany the relative contribution of the formally less qualified to total unemployment (total employment) is high (low) but doesn't turn out to be unusual in the context of a comparative countries analysis. Moreover, it has to be taken into account that the low skilled represented only 13% of the German labour force in the year 2003 according to the OECD. The U.S. reference value of 10% is even below it, whereas in countries such as France or Spain more than 30% respectively 50% of the workforce can be allocated to the lowest qualification group. The OECD uses the *ISCED scale* (International Standard Classification of Education) for the classification into different skill groups. This classification is merely designed for formal education at school and so country-specific characteristics such as the comprehensive system of education and training in Germany (the so-called *"duale Ausbildungssystem"*) cannot be considered adequately. The Deutsche Bundesbank now assumes that the distribution of actual employment-relevant skills is not fundamentally different for the developed economies. As far as the population subgroups are categorized as "low-skilled" just on the basis of country-specific formal criteria, it follows from the above assumption that the specific unemployment rate of a smaller subgroup must be higher than the one of a bigger subgroup. For this reason as well as a varying level of total unemployment, skill-specific unemployment rates are insufficient indicators for an international comparison of the job prospects of low-skilled workers.

4. The flexibility of the German wage structure

Many economists assume a direct link between a lack of flexibility in the German wage structure and the fact that the rate of unemployment of low-skilled workers in Germany is significantly higher as compared to other OECD countries. The German Council of Economic Advisors, for example, adopts this point of view in its Annual Report 2002/03: "In contrast to other big industrialized countries, which have reduced their rates of unemployment, the Ger-

[7] The analysis of the Bundesbank is based on data of the Labour Force Statistics of the OECD for the year 2002 resp. 2003.

man wage structure according to qualification levels has mainly remained stable during the last twenty years despite a demand shift away from the less skilled. Inevitably unemployment must rise."[8]

Notwithstanding the popularity and the plausibility of such a hypothesis, it is difficult to operationalize and to quantify precisely the relationship between wage level or wage structure and employment.[9] Instead of testing causality explicitly we focus on a description of the wage distribution. In order to get some information about the degree of wage flexibility in Germany, wage inequality will be measured and compared with inequality values that can be observed for other countries. For such an international comparative analysis the United States seem to be an appropriate benchmark because the U.S. labour market shows a relatively low level of market regulation. The British wage inequality is often seen as lying somewhere between the German and American level. So within Europe Great Britain should be a suitable point of reference.

Harmonized data sets of the German Socio-Economic Panel (*GSOEP*), the American Panel Study of Income Dynamics (*PSID*) and the British Household Panel Survey (*BHPS*) represent the data basis for the following analysis of the intensity of wage dispersion. Section 4.1 first estimates the extent of wage inequality and outlines country-specific developments concerning wage distribution in general. Section 4.2 deals with an examination of the relationship between wage dispersion and formal educational qualification. For this purpose, wage differences between and within skill-specific groups are regarded.

4.1 Development of wage inequality in Germany, Great Britain and the United States

Previous estimations of German wage inequality differ depending on the data used and the period under observation. These studies often confirm a stable and relatively moderate dispersion of labour earnings in Germany. For Schettkat (2006) this diagnosis is based on a limitation of the observation period until the mid-1990s and on an examination of wages that is restricted to full-time employed and men. Some data sets such as the *IAB-Beschäftigtenstichprobe*[10] don't provide enough information about the individual working hours and thus don't allow calculating hourly wages. An analysis of monthly or yearly income data is open to misinterpretation: income differences which are caused by different individual working hours could be interpreted wrongly as a genuine divergence in wages. In order to avoid or at least to limit this kind of misinterpretation, many empirical studies focus on full-time employed. Ine-

[8] Sachverständigenrat Annual Report 2002/03, no. 461, authors' translation.
[9] There are various analytical difficulties such as a great heterogeneity of labour as a production factor (Fitzenberger/Garloff/Kohn 2003, pp. 1ff.).
[10] IAB Random Sample of the Gainfully Occupied.

quality studies also often use only income data of male workers because full-time employment is more spread among them than among their female colleagues.

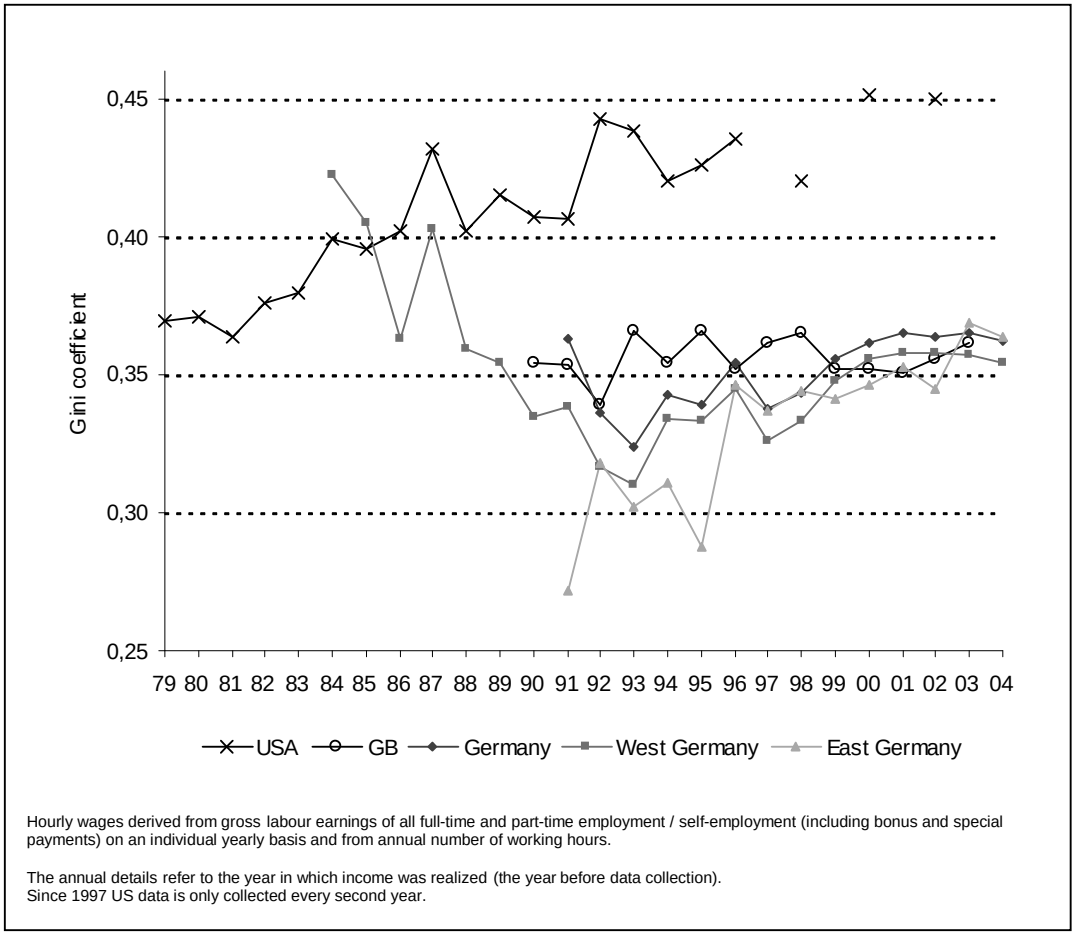
The German Socio-Economic Panel (*GSOEP*) is a wide-ranging representative longitudinal study of private households and was started in 1984 by the DIW Berlin in cooperation with Infratest Sozialforschung. It is one of the few surveys in Germany supplying detailed information on individual number of working hours. This enables the derivation of gross earnings per working hour and thereby the consideration of income data of full- *and* part-time employees. Another decisive advantage of the GSOEP-Data is the integration in the Cross-National Equivalent File (*CNEF*). This data set is provided by Cornell University and currently includes data from five country's panel studies. The data from the national panel studies have been extracted and harmonized to facilitate cross-national comparative research such as the following comparison of German, American and British wage dispersion.[11]

Figure 2 shows the level of inequality as measured by the Gini coefficient for CNEF-based wages per hour. There are clear differences between Germany, the United States and Great Britain as well as between the eastern and western part of Germany. The rather low intensity of wage dispersion in East Germany immediately after German reunification is not surprising in view of a socialist policy of levelling out wage and earning differences in the former German Democratic Republic (Möller 2005a, pp. 47f. or 2005b, p. 2). In the following years, inequality of East German labour earnings increased and reached the West German level roughly in the mid-1990s. The West German wage distribution unexpectedly proves to be less stable than its British CNEF counterpart. Starting with a Gini-value above the U.S. level in 1984, wage dispersion in West Germany declined notably until the early/mid-1990s. In the second half of the last decade, on the other hand, the western part of Germany experienced a significant rise in wage inequality. But this trend has lost its dynamics during the last years and the inequality values stabilized below their initial level of the mid-1980s. The overall German wage inequality curve ran to a great extent parallel to the one of West Germany. Except for the last two years of observation, the intensity of wage dispersion in the whole of Germany is higher than in its western and eastern region. This shows that the overall German inequality values are not just an average of the "regional disparities". Differences of earnings between West and East Germany are relevant, too.[12]

[11] Due to strict data protection laws, researchers outside the European Union are allowed to process 95% of the original GSOEP-CNEF sample only. German researchers though can work with the so-called $PEQUIV-data file which is a 100% version of the harmonized GSOEP sample.

[12] For the years after reunification the observable reduction of West-East income differences implies a lowering influence on overall German inequality.

Fig. 2: Development of wage inequality in Germany, the United States and Great Britain (Gini coefficient)



Source: GSOEP/PSID/BHPS (harmonised data of CNEF resp. $PEQUIV-File), authors' own calculations.

There exist other empirical studies that contradict the impression of a rigid German wage structure by detecting growing wage dispersion since the mid-1990s.[13] Furthermore, Gernandt and Pfeiffer (2006) find declining decile ratios for West Germany between 1984 and 1994. This indicates a certain wage compression - but the change of the inequality level is quite small, so the authors don't doubt the often assumed relative stability of the West German income distribution until the mid-1990s. Especially Möller (2005a/b) and Brenke (2007) connect the rising German wage inequality in the subsequent years with an augmentation of disparity above-average in the bottom part of income distribution. Taking decile ratios as indicators for the extent of wage dispersion at the lower and upper end of the wage scale (D9/D5 respectively D5/D1) an analysis of the harmonized GSOEP/CNEF data confirms this finding. The value of the ninth decile over the median increased notably in East Germany during the 1990s, but in West Germany and in Germany as a whole the D9/D5-ratio changed only

[13] See Becker (2005), Möller (2005a/b), Gernandt/Pfeiffer (2006) or Brenke (2007).

slightly over the analyzed period. The German D5/D1-ratio, however, shows similar but even more marked tendencies as described above for the Gini coefficient. Furthermore, the level of wage inequality among low income earners is remarkably high in international comparison. According to a study by the European Commission (2005) based on the Structure of Earnings Survey (*SES*), the D5/D1-ratio for Germany was higher than for any other Western European country in 2002 and was only exceeded by some new EU accession countries. An analysis of current CNEF data results in a D5/D1-ratio that lies above the British and even the American reference value.

However, regarding the Gini ratio, *figure 2* proves that the intensity of wage dispersion in Germany doesn't reach the U.S. level despite widening wage inequality in the second half of the 1990s. On the contrary, estimated German wage inequality stays clearly behind the American level in particular for the last years under observation. Over a period of more than 20 years the U.S. Gini coefficient rises almost constantly and is finally notably higher than the German Gini coefficient. British wage dispersion, on the other hand, fluctuates around a more or less constant level and is exceeded by German index values at the end of the 1990s.

Blackburn (1989) proposed a convincing method to assess the economic significance of differences in inequality, as measured by the Gini coefficient. The method makes use of the relation $G_{F^*} - G_F = k/2\mu_F$, where F* is the income distribution that results if a lump sum tax k is imposed on every individual belonging to the poorest 50% of the population in order to finance a (fictitious) transfer of the same amount to every member of the richer half of the population.[14] Referring to the values of the overall German and U.S. Gini ratio in the year 2002, the so-called Gini criterion implies that, to obtain the same wage dispersion in Germany as in the United States, the amount of k = 2.48 Euro would have to be taken from every individual with an hourly labour income below the median in order to transfer it to those in work whose wages per hour are above the median wage. This is equivalent to 17.21% of the overall German average wage per hour in 2002 (arithmetic mean calculated on the basis of GSOEP). In contrast, an adaptation of the German and British level of disparity would require a lump sum tax transfer in the opposite direction ("from rich to poor") of 1.55% of the average German wage per hour.

To be able to assess the robustness of the previous results, the analysis of the CNEF data has been carried out in diverse variants. An exclusion of part-time employees leads to lower Gini values for all samples. Especially the estimation results for West Germany in the 1980s

[14] Blackburn originally used this method to illustrate the economic relevance of a change in inequality over a specific period of time. The application to differences in wage dispersion between various countries/regions follows the analytical procedure of Biewen (2000).

tend to be lower and reduce the extent of the observed compression of wages. The calculation of group-specific disparities reveals a tendentially stronger inequality for women than for men in Great Britain, East Germany and in particular in West Germany. For the United States, however, the dispersion of male wages clearly exceeds the dispersion of female wages. All in all, sensitivity analyses by means of the Gini ratio indicate a higher German wage inequality relative to Great Britain and particularly relative to the U.S., if part-time employment as well as income data of women are taken into consideration. Furthermore, alternative measures of inequality were calculated as supplements to the Gini coefficient. More or less the same tendencies of development in wage inequality can be detected on the basis of the D9/D1-ratio, various Atkinson inequality measures (with $\varepsilon = 0.5$, 1, 1.5 and 2) as well as the general entropy indices I_0 (mean logarithmic deviation), I_1 (Theil index) and I_2 (transformed coefficient of variation).[15] On the other hand, the relative height of the British estimation results seems to depend to a greater extent on the choice of the disparity index. The figures of the mean logarithmic deviation, for example, show a marked rise of the British wage inequality over the analyzed period and hence, in contrast to the estimation results for the Gini coefficient, also always a more intensive wage dispersion in Great Britain than in Germany. The extent of the differential between the measured wage inequality in Germany and the United States also partially depends on the index used. Regarding, for instance, the D9/D1-ratio, the rise of inequality in Germany since the mid-1990s goes beyond the one indicated by the Gini coefficient and thus leads to a convergence of the German and American level of wage dispersion. However, except for the D5/D1-relation, the conclusion of a higher disparity in the United States than in Germany proves to be robust to alternative inequality indices.

Freeman and Schettkat (2001) associate the weaker dispersion of German labour earnings with a narrower distribution of skills. But even adjusted for skills the authors find that Germany has a more compressed wage structure than the United States. Moreover, the German welfare state reduces notably the inequality of market incomes. Especially in East Germany the redistributive effects are unique in international comparison (Frick/Goebel et al. 2005, p. 67 and Goebel/Habich/Krause 2004, pp. 626f.). Because of the redistribution of income as well as additional sources of income at the household level, incidentally, no close relationship exists between individual wages and individual economic wealth in Germany (Becker 2005, p. 282 and Sachverständigenrat 2006, no. 35).

[15] The calculation of the Gini ratio as well as all other inequality measures was performed by taking the available CNEF sample weights into consideration.

4.2 Distribution of wages and educational qualification

In order to analyse the relevance of formal educational qualification for the distribution of labour earnings, it is advisable to disaggregate the sample population into disjoint subgroups. Corresponding to the analysis of the employment structure, it suggests itself to divide the work force into a subpopulation with a low, a medium and a high level of qualification.[16] On the basis of the distinction of different skill groups, subgroup inequalities have been estimated using the Gini coefficient and the mean logarithmic deviation. The increase in wage inequality in the United States is particularly pronounced for the high skilled, whereas the dispersion among the low skilled was even declining in recent years but without falling behind the level of income inequality among unskilled workers in Germany. In West Germany the subgroup disparity of university graduates is widely stable over the whole observation period while the tendencies of development in wage inequality are mainly reflected in the history of the specific disparity of the low and medium education group.[17]

In addition to the analyses above, the so-called decomposition of inequality presents an appropriate method to assess and to quantify the contribution to overall inequality of inequality with and between the different skill-specific subgroups of the population. The mean logarithmic deviation (MLD resp. I_0) for example is a member of the Generalised Entropy class of inequality measures which all satisfy the axiom of additive decomposability. This means that the estimated overall inequality can be split into a between-group and a within-group component ($I_{total} = I_{within} + I_{between}$). The between-group inequality is equivalent to assuming that each group member has the same income (the mean income of the group). The within-group inequality of I_0, on the other hand, is measured by calculating the wage dispersion within each subgroup and summing them up, using as weight the corresponding population share. The indicator $R_{between} = I_{between} / I_{total}$ can be seen as the analogue of the R^2-statistic used in regression analysis (ANOVA) and represents the amount of inequality explained by population characteristics. The examination of all CNEF samples shows that only a very small part of total inequality can be explained by educational qualification. High within-group components indicate that the division of the population into only three skill groups, as described above, is a problematic oversimplification. The often-used classification of persons in work into three

[16] Such a disaggregation can be put into practice for German and US CNEF data on the basis of the variable "*Education With Respect to High School*". Unfortunately, this variable is not available in the British data set.
[17] It should be borne in mind that the composition of the various samples is in part quite different. The CNEF population shares of university graduates in the United States for example are more than 25 respectively 30 percentage points above the proportions of high-skilled labour in West and East Germany. In the East German sample, furthermore, a high level of subgroup disparity of the unskilled goes together with a very low population share of low-skilled individuals.

or just two qualification levels does not capture adequately the heterogeneity of labour as a production factor. Nevertheless, Schettkat (2006) points to findings that detect high wage dispersion even within narrowly defined skill groups. Therefore, he emphasizes another attempt to explain high wage differentiation among individuals of the same education level: contrary to the model of perfect competition, divergence between wage level and value of the marginal product because of market imperfections (for instance in the case of a monopsonistic labour market) or institutional influences should be taken into consideration.

Table 3: Wage inequality decomposition by subgroup (MLD*)

Disaggregation by:		education level		gender	
		1984	2002	1984	2002
West Germany	between-group inequality	4,3%	10,0%	5,0%	5,0%
	within-group inequality	*95,7%*	*90,0%*	*95,0%*	*95,0%*
USA	between-group inequality	10,9%	12,8%	11,1%	5,5%
	within-group inequality	*89,1%*	*87,2%*	*88,9%*	*94,5%*

*) Decomposition analyses based on mean logarithmic deviation (MLD=I_0).

Hourly wages derived from gross labour earnings of all full-time and part-time employment / self-employment (including bonus and special payments) on an individual yearly basis and from annual number of working hours.
Education levels according to ISCED classification (low, medium, high).

The annual details refer to the year in which income was realized (the year before data collection).

Source: GSOEP/PSID/BHPS (harmonised data of CNEF resp. $PEQUIV-File), authors' own calculations.

Between-group disparities are even lower, if the sample population is disaggregated by gender instead of educational qualification. *Table 3* illustrates that in 2002 the belonging to a certain skill group was unambiguously the more important determinant of wage dispersion. But that is not always true for previous years of observation. A long-term comparison of the inequality effects of the different socio-economic characteristics proves that "gender" has become less significant in relation to "educational qualification" in West Germany and the United States. In both countries the rank order of the inequality contributions changed between the reference years 1984 and 2002.[18]

5. Economic conclusions

Globalization and skill-biased technological change have contributed substantially to the decline of demand for low-skilled labour in the industrialized countries. Like most advanced economies, Germany increasingly specializes in goods and services of high quality and the low skilled are at risk of becoming losers of modernization. Section 3 has shown that the em-

[18] CNEF sample weights could not be used for the decomposition analyses. In order to avoid a stronger bias of the estimation results, the GSOEP high income subsample G and the PSID low income subsample have been excluded from the analysis.

ployment opportunities for persons without completed vocational training have deteriorated systematically and worsened compared to other qualification groups since the mid-1970s. But how can the job prospects of the less qualified in Germany be improved? The economic debate focuses on training strategies and proposals for enhancing flexibility of the German wage structure. Now, these political approaches shall be outlined briefly and evaluated against the background of the empirical results described above.

One way to mitigate the negative consequences of the shift of labour demand is to adapt the qualification structure of labour supply. Jan Tinbergen inferred already in the year 1975 that "… it is a ›race‹ between supply (by education) and demand (by technological development) which determines the changes in relative scarcity of any type of manpower" (Tinbergen 1975, p. 55). In Germany a process of educational expansion has increased the skill level of the population over the last decades. However, since the early 1990s this development has stagnated to a certain degree and, furthermore, the share of younger Germans with less than upper secondary education even rose in recent years (Reinberg 2004, p. 66; Statistisches Bundesamt 2006b, p. 34). A further expansion and improvement of the system of education and vocational training might counteract the trend of stagnation. Some below-average performances of German students in OECD's Programme for International Student Assessment (*PISA*) with especially bad results for children of immigrant or socially disadvantaged families raise the question whether the characteristics of the German education and training system still ensure better job prospects for the students at the bottom half of the ability range, as it was assumed for example by Nickell and Bell (1996). In addition to an improvement of formal education and of training measures for unemployed workers, stronger incentives for advanced training of already employed persons are considered. This should contribute to the individual's long-term employability (*livelong learning*) but also improve the employment opportunities for the less qualified by reducing the number of low-skilled jobs occupied by higher-skilled employees (*activation of mobility chains*) (Albers 2005, pp. 399ff.).

However, an adjustment of the skill level of the labour force needs time and can rather be seen as a long-term strategy. In the short term, many economists and politicians expect to achieve better job prospects for the low skilled with the aid of a stronger wage differentiation. It is often assumed that Germany has a relatively compressed wage structure with a lack of downward flexibility. Negative employment effects, in particular for less-qualified workers, can be derived from this assumption theoretically. In this context the concrete political proposals aim at more flexible contractually agreed minimum wages and at the elimination of the "wage competition" of the German welfare state (Sinn 2005, p. 22). Additional employment

opportunities for low-skilled workers due to a reduction of labour costs are expected particularly in the German service sector - mainly in the area of personal consumption and household services (Schettkat 2006, p. 56 or Greifenstein 1999, pp. 8ff. and 40). New low-paid jobs, however, can only be occupied if the unemployed are willing to re-start work. In order to increase the difference between the income of low-paid workers and the social benefits for unemployed persons, it is proposed to subsidize less-productive labour.[19] Both wage subsidies for employers and so-called "combi-wages" for employees, i.e. a combination of usual wage payments and public transfers, have been intensively discussed in Germany. However, notably poverty effects are possible if subsidies are financed by reduced social benefits and if the additionally "activated" labour supply doesn't meet the requirements of labour demand (Dietz/Koch/Walwei 2006, p. 6). Weinkopf and Jaehrling (2005), for instance, criticize that the "combi-wage" approaches underestimate the actual qualification requirements of the so-called simple jobs. Hence, staffing problems in the low-wage sector cannot be merely assigned to lacking financial incentives.

In Germany the opponents of the strategy of stronger wage differentiation point to socio-political problems. They presume that there is less acceptance for a reduction of social benefits and an expansion of the low-wage sector in Germany than for example in the United States. The social price appears too high to them – in particular in view of an employment dividend that is in their judgement uncertain (or even negative because of a loss of purchasing power). Our analyses of the CNEF data as well as some other recent empirical studies detect rising wage inequality in Germany since the mid-1990s. Moreover, Bellmann and Gartner (2003) identify increasing educational wage premia in Germany in the 1990s. Despite increasing wage dispersion and declining relative wages, the group-specific unemployment rate of the unskilled rose considerably. Furthermore, there has already been an expansion of the German low-wage sector mainly due to a growing number of precarious jobs in recent years (Deutsche Bundesbank 2007, pp. 35 and 38). The assessment of the size of the low-wage sector is difficult - conceptually as well as with respect to the data available. As a rough reference value, the German Council of Economic Advisors indicates that about one fifth of German employees work in the low-wage sector which, therefore, has a usual size in a cross-country comparison (Sachverständigenrat 2006, no. 19ff.). After atypical work has risen sharply since the end of the 1990s, about 20% to 40% of all working persons without a com-

[19] A (actual or just assumed) lack of productivity is associated with the formally less qualified as well as with long-term unemployed persons. More than 60% of all unemployed persons are either already unemployed for more than 12 months or low-skilled. Nevertheless, the two groups are not congruent with each other. On the contrary, it is found that the level of educational attainment has no important effect on unemployment duration (Sachverständigenrat 2006, no. 14).

pleted vocational training are only marginally employed, with an income below the low earnings threshold (Reinberg and Hummel 2005). The low-wage sector, however, is not only dominated by the low skilled. Labour market analyses rather indicate that the formally unskilled and better-qualified workers compete even for simple and low-paid jobs (Sachverständigenrat 2006, no. 27).

On the search for alternative political approaches the critics of the wage flexibility strategy not only focus on rising employment in the United States and Great Britain but also on successful employment policies in other countries such as the Netherlands or the Scandinavian countries. These countries are regarded as examples for a successful labour market integration of the low skilled that could be realized without the price of increasing wage inequality, or even giving up the idea of the traditional European welfare state.[20] Furthermore, Howell et al. (2007) have systematically assessed the evidence of cross-country regression literature and they conclude that a variety of labour market models can be consistent with good employment performance. It is argued that a too strong focus on wage rigidities could result in disregarding other promising political approaches. Flassbeck and Spiecker (2001), for example, emphasize the general necessity of a consistent macroeconomic policy aiming at reducing unemployment. In this context, they conclude that a considerable part of the current employment problems of low-skilled workers is due to a certain passivity of German policymakers in the last decades. Furthermore, a comprehensive reform of the German tax system is discussed. New labour market impulses, particularly for less-productive workers, might be initialized by reducing the difference between gross and net incomes (Dietz/Koch/Walwei 2006, p. 6).

The arguments of protagonists and opponents of a stronger wage differentiation have to be confronted with the results of empirical analyses. Recent studies show an increasing wage inequality in particular in the bottom half of German income distribution since the mid-1990s. Our analyses of CNEF wage data confirm these findings but also detect a wage compression in West Germany in the second half of the 1980s. The gap between German and U.S. inequality is currently higher than 20 years ago. Is wage inequality in Germany thus still too low to cause notable employment effects or, however, already so high that there is reason to demand the introduction of statutory minimum wages? This question cannot be answered easily on the basis of the recent statistical findings. Research results depend among other things on the data used. Our examination of CNEF data, moreover, has illustrated that the definition of the sam-

[20] In 2004 the relative unemployment risks of the low skilled in Denmark, Norway, Finland, Sweden and the Netherlands (in analogy to table 2 indicated by the ratios of the group-specific unemployment rates of the lowest and highest skill group) were below the OECD average and thus also below the British and the US level.

ple population or even the choice of the inequality measure can also influence the estimation results. Furthermore, the evaluation of German wage inequality and employment performance in a cross-country comparison implies the danger of arguing with "anecdotic evidence" as a result of a conscious choice of the countries of reference. Generally, data selection, the analytical approach and the interpretation of the results in the economic debate are not always independent of political ideas and concepts. Anyway, the assumption of a simple monocausal relationship between wage disparity and the intensity of unemployment among low-skilled workers, according to the *„two-sides of the same coin"*-hypothesis, cannot be confirmed by the empirical findings presented above.

References

Albers, M. 2005, 'Zur Arbeitsmarktsituation der Geringqualifizierten in Deutschland', in G. Huber, H. Krämer and H. D. Kurz (Eds.), *Einkommensverteilung, technischer Fortschritt und struktureller Wandel*. Festschrift for Peter Kalmbach, Marburg: Metropolis, pp. 391-402.

Becker, I. 2005, 'Entwicklungstendenzen der personellen Einkommensverteilung in Deutschland', in E. Hein, A. Heise and A. Truger (Eds.), *Löhne, Beschäftigung, Verteilung und Wachstum - Makroökonomische Analysen*, Marburg: Metropolis, pp. 265-286.

Bellmann, L. and Gartner, H. 2003, 'Fakten zur Entwicklung der qualifikatorischen und sektoralen Lohnstruktur', *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung,* vol. 36, no. 4, pp. 493-508.

Biewen, M. 2000, 'Income Inequality in Germany during the 1980s and 1990s', *Review of Income and Wealth,* vol. 46, no. 1, pp. 1-19.

Blackburn, M.L. 1989, 'Interpreting the Magnitude of Changes in Measures of Income Inequality', *Journal of Econometrics,* vol. 42, no. 1, pp. 21-25.

Brenke, K. 2007, 'Zunehmende Lohnspreizung in Deutschland', *DIW Wochenbericht*, no. 6, pp. 73-79.

Davis, D.R. 1998, 'Does European Unemployment Prop Up American Wages? National Labor Markets and Global Trade', *American Economic Review,* vol. 88, no. 3, pp. 478-494.

Deutsche Bundesbank 2007, 'Der Arbeitsmarkt in Deutschland: Grundlinien im internationalen Vergleich'. *Monthly Report January 2007*, Frankfurt am Main, pp. 265-286.

Dietz, M., Koch, S. and Walwei, U. 2006, 'Kombilohn - Ein Ansatz mit Haken und Ösen', *IAB-Kurzbericht,* no. 3/2006.

European Commission 2005, 'Earnings disparities and determinants of the earnings distribution in the EU', in: *Employment in Europe Report 2005*, Brussels, pp. 163-209.

Feenstra, R.C. and Hanson, G. 2001, 'Global Production Sharing and Rising Inequality: A Survey of Trade and Wages', *NBER Working Paper,* no. 8372.

Fitzenberger, B., Garloff, A. and Kohn, K. 2003, 'Beschäftigung und Lohnstrukturen nach Qualifikation und Altersgruppen: Eine empirische Analyse auf Basis der IAB-Beschäftigtenstichprobe', Mannheim: *ZEW Discussion Paper*, no. 03-75.

Flassbeck, H. and Spiecker, F. 2001, 'Lohnstruktur und Beschäftigung', *Otto Brenner Stiftung Working Paper*, no. 23.

Freeman, R.B. 1995, 'Are your wages set in Beijing?', *Journal of Economic Perspectives,* vol. 9, no. 3, pp. 15-32.

Freeman, R.B. and Schettkat, R. 2001, 'Skill compression, wage differentials, and employment: Germany vs. the US', *Oxford Economic Papers,* vol. 53, no. 3, pp. 582-603.

Frick, J.R., Goebel, J., Grabka, M.M., Krause, P., Schäfer, A., Tucci, I. and Wagner, G.G. 2005, 'Zur langfristigen Entwicklung von Einkommen und Armut in Deutschland', *DIW Wochenbericht*, no. 4, pp. 59-68.

Gernandt, J. and Pfeiffer, F. 2006, 'Rising Wage Inequality in Germany', Mannheim: *ZEW Discussion Paper*, no. 06-019.

Goebel, J., Habich, R. and Krause, P. 2004, 'Einkommen - Verteilung, Anpassung und Dynamik', in Statistisches Bundesamt (Ed.), *Datenreport 2004*, Bonn, pp. 623-638.

Greifenstein, R. 1999, 'Lohnstruktur und Beschäftigung': Conference of the Friedrich-Ebert-Foundation, Bonn, 16. December 1998, *Series 'Wirtschaftspolitische Diskurse'*, no. 125.

Grossmann, V. 1999, 'Lohnungleichheit in den USA, Arbeitslosigkeit in Europa: Wirklich zwei Seiten derselben Medaille?', *Wirtschaft und Gesellschaft,* vol. 25, no. 4, pp. 423-447.

Heitger, B. and Stehn, J. 2003, 'Trade, Technical Change, and Labour Market Adjustment', *The World Economy,* vol. 26, no. 10, pp. 1481-1501.

Howell, D.R., Baker, D., Glyn, A. and Schmitt, J. 2007, 'Are Protective Labor Market Institutions Really at the Root of Unemployment? A Critical Perspective on the Statistical Evidence', *Capitalism and Society,* vol. 2, no. 1, pp. 1-71.

IMF 2007, 'Globalization and Inequality', in: *World Economic Outlook 2007*, Washington, D.C., pp. 31-65.

Kalina, T. and Weinkopf, C. 2005, 'Beschäftigungsperspektiven von gering Qualifizierten', *IAT-Report*, no. 2005-10.

Klemm, K. 2001, 'Bildungsexpansion, Erfolge und Mißerfolge sowie Bildungsbeteiligung', in W. Böttcher, K. Klemm and T. Rauschenbach (Eds.), *Bildung und Soziales in Zahlen*, Weinheim: Juventa, pp. 331-342.

Krugman, P.R. 1994, 'Past and Prospective Causes of High Unemployment', *Federal Reserve Bank of Kansas City Economic Review*, vol. 79, no. 4, pp. 23-43.

Krugman, P.R. 1995, 'Growing World Trade: Causes and Consequences', *Brookings Papers on Economic Activity,* vol. I, pp. 327-377.

Kupka, P. 2005, 'Gering Qualifizierte und einfache Tätigkeiten aus der Sicht bestehender Arbeitsmarktprognosen', in T. Hoffmann (Ed.), *Einfache Arbeit für gering Qualifizierte - Material und Handlungshilfen*, Eschborn: RKW, pp. 9-15.

Möller, J. 2005a, 'Die Entwicklung der Lohnspreizung in West und Ostdeutschland', in L. Bellmann, O. Hübler, W. Meyer and G. Stephan (Eds.), *Institutionen, Löhne und Beschäftigung*, Beiträge zur Arbeitsmarkt- und Berufsforschung 294, Nuremberg, pp. 47-63.

Möller, J. 2005b, 'Lohnungleichheit in West- und Ostdeutschland im Vergleich zu den USA', Mannheim: *ZEW Individual Project Working Paper.*

Nickell, S. 2003, "Labour Market Institutions and Unemployment in OECD Countries', *CES ifo DICE Report*, no. 2/2003.

Nickell, S. and Bell, B. 1996, 'Changes in the Distribution of Wages and Unemployment in OECD Countries', *American Economic Review,* vol. 86, no. 2, pp. 302-308.

Nollmann, G. 2006, 'Erhöht Globalisierung die Ungleichheit der Einkommen?', *Kölner Zeitschrift für Soziologie und Sozialpsychologie,* vol. 58, no. 4, pp. 638-659.

OECD 2005a, 'Trade-adjustment Costs in OECD Labour Markets: A Mountain or a Molehill', in: *Employment Outlook 2005*, Paris, pp. 23-72.

OECD 2005b, *Education at a Glance 2005,* Paris.

OECD 2006, *Education at a Glance 2006,* Paris.

Reinberg, A. 2004, 'Geringqualifizierte - Modernisierungsverlierer oder Bildungsreserve?', in H. Loebe and E. Severing (Eds.), *Zukunft der einfachen Arbeit - Von der Hilfstätigkeit zur Prozessdienstleistung*, Bielefeld: W. Bertelsmann, pp. 61-75.

Reinberg, A. and Hummel, M. 2005, 'Vertrauter Befund - Höhere Bildung schützt auch in der Krise vor Arbeitslosigkeit', *IAB Kurzbericht*, no. 9/2005.

Reinberg, A. and Hummel, M. 2007, 'Qualifikationsspezifische Arbeitslosigkeit im Jahr 2005 und die Einführung der Hartz-IV-Reform - Empirische Befunde und methodische Probleme', *IAB Forschungsbericht*, no. 9/2007.

Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung 2002/03, 'Zwanzig Punkte für Beschäftigung und Wachstum', *Annual Report*, Stuttgart: Metzler-Poeschel.

Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung 2006, 'Arbeitslosengeld II reformieren: Ein zielgerichtetes Kombilohnmodell', Wiesbaden.

Samuelson, P.A. 2004, 'Where Ricardo and Mill Rebut and Confirm Arguments of Mainstream Economists Supporting Globalization', *Journal of Economic Perspectives,* vol. 18, no. 3, pp. 135-146.

Schettkat, R. 2006, 'Lohnspreizung: Mythen und Fakten', Düsseldorf: *edition der Hans Böckler Stiftung 183.*

Sinn, H. 2005, 'Basar-Ökonomie Deutschland', *Ifo-Schnelldienst,* vol. 58, no. 6, pp. 3-42.

Statistisches Bundesamt 2006a, *Leben in Deutschland: Haushalte, Familien und Gesundheit - Ergebnisse des Mikrozensus 2005,* Wiesbaden.

Statistisches Bundesamt 2006b, *Im Blickpunkt: Deutschland in der Europäischen Union 2006,* Wiesbaden.

Tinbergen, J. 1975, *Income Distribution: Analysis and Policies,* Amsterdam: North-Holland.

Weinkopf, C. and Jaehrling, K. 2005, 'Stellenbesetzungsprobleme bei Einfacharbeitsplätzen bzw. Niedriglohnjobs', in T. Hoffmann (Ed.), *Einfache Arbeit für gering Qualifizierte - Material und Handlungshilfen*, Eschborn: RWK, pp. 16-17.

Williamson, J.G. 1995, 'Globalization and Inequality Then and Now: the Late 19th and Late 20th Centuries Compared', *NBER Working Paper*, no. 5491.

Wood, A. 1994, *North-South Trade - Employment and Inequality,* Oxford: Clarendon.

Hohenheimer Diskussionsbeiträge aus dem

INSTITUT FÜR VOLKSWIRTSCHAFTSLEHRE

DER UNIVERSITÄT HOHENHEIM

Nr.	238/2004	Tone Arnold, Myrna Wooders, Dynamic Club Formation with Coordination
Nr.	239/2004	Hans Pitlik, Zur politischen Rationalität der Finanzausgleichsreform in Deutschland
Nr.	240/2004	Hans Pitlik, Institutionelle Voraussetzungen marktorientierter Reformen der Wirtschaftspolitik
Nr.	241/2004	Ulrich Schwalbe, Die Berücksichtigung von Effizienzgewinnen in der Fusionskontrolle – Ökonomische Aspekte
Nr.	242/2004	Ansgar Belke, Barbara Styczynska, The Allocation of Power in the Enlarged ECB Governing Council: An Assessment of the ECB Rotation Model
Nr.	243/2004	Walter Piesch, Einige Anwendungen von erweiterten Gini-Indices P_k und M_k
Nr.	244/2004	Ansgar Belke, Thorsten Polleit, Dividend Yields for Forecasting Stock Market Returns
Nr.	245/2004	Michael Ahlheim, Oliver Frör, Ulrike Lehr, Gerhard Wagenhals and Ursula Wolf, Contingent Valuation of Mining Land Reclamation in East Germany
Nr.	246/2004	Ansgar Belke and Thorsten Polleit, A Model for Forecasting Swedish Inflation
Nr.	247/2004	Ansgar Belke, Turkey and the EU: On the Costs and Benefits of Integrating a Small but Dynamic Economy
Nr.	248/2004	Ansgar Belke und Ralph Setzer, Nobelpreis für Wirtschaftswissenschaften 2004 an Finn E. Kydland und Edward C. Prescott
Nr.	249/2004	Gerhard Gröner, Struktur und Entwicklung der Ehescheidungen in Baden-Württemberg und Bayern
Nr.	250/2005	Ansgar Belke and Thorsten Polleit, Monetary Policy and Dividend Growth in Germany: A Long-Run Structural Modelling Approach
Nr.	251/2005	Michael Ahlheim and Oliver Frör, Constructing a Preference-oriented Index of Environmental Quality
Nr.	252/2005	Tilman Becker, Michael Carter and Jörg Naeve, Experts Playing the Traveler's Dilemma
Nr.	253/2005	Ansgar Belke and Thorsten Polleit, (How) Do Stock Market Returns React to Monetary Policy? An ARDL Cointegration Analysis for Germany
Nr.	254/2005	Hans Pitlik, Friedrich Schneider and Harald Strotmann, Legislative Malapportionment and the Politicization of Germany's Intergovernmental Transfer Systems
Nr.	255/2005	Hans Pitlik, Are Less Constrained Governments Really More Successful in Executing Market-oriented Policy Changes?
Nr.	256/2005	Hans Pitlik, Folgt die Steuerpolitik in der EU der Logik des Steuerwettbewerbes?
Nr.	257/2005	Ansgar Belke and Lars Wang, The Degree of Openness to Intra-Regional Trade – Towards Value-Added Based Openness Measures